III. STATUS OF CLAIMS

Claims 1-20 are pending and are the basis of this Appeal (*see* Claims Appendix).

Claims 1-20 stand rejected.

IV. STATUS OF AMENDMENTS

Subsequent to the August 26, 2004 Final Office Action, Appellant amended claim 13. In the December 14, 2004 Advisory Action, the Examiner indicated that the amendment would be entered for purposes of Appeal. Accordingly, all amendments, which have been made during the prosecution of the present application, have been entered, and are reflected in the attached Claims Appendix.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention is a printing system having a printer device and a data processing device, and a method to be used in the printing system. The features of independent claims 1, 2, 8, 13 and 17 are described herein in reference to non-limiting embodiments in Appellant's specification.

Claim 1- Claim 1 recites a printing system 1 having a host operable to output print data compatible with at least one of a plurality of different printer languages, and a data processing device 31 to 3N having a plurality of intermediate code generators 301 (Fig. 1; pgs. 10 and 11 of Appellant's specification). At least one of the intermediate code generators 301 is operable to generate intermediate code compatible with the print data by performing a language analysis of the print data (pg. 11 of Appellant's specification). A plurality of intermediate code rasterizing means 321 to 32N are provided for respectively rasterizing the generated intermediate code into print image information (pg. 13 of Appellant's specification).

The printer further has printing means 20, 21, 22 for controlling the print image information rasterized by the intermediate code rasterizing means 321 to 32N to be stored in a prescribed storage area 21 of the printer 2 (pgs. 10, 13 and 14 of Appellant's specification). Printing is performed on the basis of the stored print image information (pg. 14 of Appellant's specification).

Claim 2- Claim 2 recites a printing system having a printer 2 that receives print data. The printer 2 has a plurality of intermediate code generators 241, 242, with at least one being

operable to generate intermediate code compatible with the print data by performing language analysis of the print data (Fig. 7; pgs. 10, 11 and 22 of Appellant's specification). Further, the printer 2 has a plurality of intermediate code rasterizing means 261, 262 for rasterizing the generated intermediate code into print image information (Fig. 7; pg. 22 of Appellant's specification). The at least one intermediate code generator is operable to process print data described in any one or more of a plurality of different printer languages (pg. 11 and 22 of Appellant's specification).

Claim 8- Claim 8 recites a printer device 2 having a determination means 23 for determining the type of language of input print data (Fig. 7; pg. 22 of Appellant's specification). The determination means 23 also selects from a plurality of intermediate code generating means 241, 242 on the basis of the determination result, and delivers the print data to the selected intermediate code generating means (pg. 22 of Appellant's specification). The printer device 2 further has printing means 20, 21, 22 for controlling print image information rasterized by intermediate code rasterizing means 261, 262, to be stored in a prescribed storage area 21 of said printer device 2 (Fig. 7; pgs. 10, 13, 14 and 22 of Appellant's specification). Printing is performed on the basis of the stored print image information.

Claim 13- Claim 13 recites a data processing device 31 to be used in combination with a printer device 2. The data processing device 31 has a plurality of intermediate code generating means 301 to 3N for generating intermediate code compatible with print data by performing

language analysis of the print data, and intermediate code rasterizing means 321 for rasterizing corresponding generated intermediate code from a selected one of the intermediate code generating means into print image information (Fig. 1; pgs. 11 and 13 of Appellant's specification). The intermediate code generating means of the data processing device, other than the selected intermediate code generating means, are capable of analyzing print data described in a language incompatible with the printer device alone (pg. 23 of Appellant's specification).

Claim 17 - Claim 17 recites a printing method to be used in a printer system combining a printer device 2 and a data processing device 31 (Figs. 1 and 7). The printing method has a determination step, in the printer device, that determines the type of language of input print data, selects an intermediate code generating means 301 to 3N or 241, 242 on the basis of the determination result, and delivers the print data to the selected intermediate code generating means (pgs. 10-12 and 22 of Appellant's specification). An intermediate code generating step generates the intermediate code compatible with the print data by performing language analysis of print data, and outputs the intermediate code identification information, in an intermediate code generating means 301 to 3N or 241, 242 of the printer device or an intermediate code generating means of the data processing device (pgs. 10-12 and 22 of Appellant's specification).

Finally, a print control step, in the printer device 2, that selects an intermediate code rasterizing means 261, 262 or 303 on the basis of intermediate code identification information input from the intermediate code generating means 301 to 3N or 241, 242, controls print image information rasterized by the selected intermediate code rasterizing means to be stored in a

prescribed storage area 21 of said printer device 2, and prints on the basis of the stored print image information (pgs. 10, 13, 14 and 22 of Appellant's specification).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 17-20 stand rejected under 35 U.S.C. § 102(b), as allegedly being anticipated by EP 0820004 to Suzuki et al. ("Suzuki").

B. Claims 1-16 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Suzuki in view of U.S. Patent No. 6,441,919 to Parker et al. ("Parker").

VII. ARGUMENT

A. Rejection of claims 17-20 under 35 U.S.C. § 102(b) in view of Suzuki

It is respectfully submitted that claims 17-20 are patentable over Suzuki for at least the following reasons.

1. Claim 17

Appellant submits that Suzuki fails to teach each and every limitation recited in claim 17. For example, claim 17 recites determining the type of language of input print data and selecting an intermediate code generating means on the basis of the determination result.

On page 2 of the August 26, 2004 Final Office Action, the Examiner asserts that Suzuki teaches selecting an intermediate code generating means with its graphics module (GRM). The GRM module, however, merely generates PIM code from the particular plotting command expressed in the PDL. (Col. 8, lines 5-8). In other words, the GRM module does not "select" an intermediate code generating means on the basis of a determination result of the type of language. Rather, it merely uses the one single intermediate code generating means present in the controller.

Appellant submits that Suzuki does not teach or suggest "selecting" an intermediate code generating means based on the determination of a "type of language," as claimed. As clearly disclosed in the non-limiting embodiments of the present application, a "type" of language refers to various different kinds of printer control languages (PCL), such as ESC/Page, Post Script, and even PDL. According to the present invention, a respective intermediate code generating means

corresponding to the "type" of language determined is "selected," and then, the appropriate intermediate code is generated that is compatible with the type of language. Suzuki discloses a system where the printer throughput can be increased by generating the intermediate code in the host computer, specifically in the printer driver, under certain circumstances, i.e., driver page mode, as opposed to generating the intermediate code in the printer, i.e., printer page mode.

More specifically, as disclosed in Suzuki, and shown in Fig. 1, an application 5 in the host computer 1 generates a call for a new print job and delivers the call (DDI call) to the printer driver 9 via the application interface (API). The printer driver then converts the DDI call to a print command that can be recognized by the printer 3. (Col. 4, lines 24-26). In other words, the printer driver 9 is specifically compatible with the particular type of the printer 3. Printer driver 9 then outputs the print job to the printer 3 via either a high-level printer control language (PCL), such as PDL, or it transforms the PDL commands to an intermediate code (DIM). (Col. 4, lines 32-35). That is, there is only one "type" of language handled by the printer driver in Suzuki, and this language is PDL. Indeed, in order to achieve the stated objective of the Suzuki invention, i.e., speeding up the print process, it is disclosed that some of the typical processing can be offloaded to the host computer, e.g., converting the PDL to intermediate code, but Suzuki does not anywhere disclose that various different high-level languages are processed by the host computer. Accordingly, since only one type of language, i.e., PDL, is processed by the printer driver 9 in Suzuki, it logically follows that Suzuki does not disclose "selecting" an intermediate code generating means, as claimed in independent claim 17.

Consistent with the discussion above in regard to the printer driver, the GRM module cited in the grounds of rejection is located in the controller of the printer 3 and is used to convert the PDL commands to intermediate code. (Col. 8, lines 5-7). Intermediate code, when generated by the printer controller as opposed to the host printer driver, is referred to as PIM code. (Col. 4, lines 36-41). As disclosed in Suzuki, when the print job is desired to be printed in "printer page mode", the GRM generates the PIM directly from the PDL commands delivered by the printer driver 9, and when "driver page mode" is desired, the GRM generates the PIM code by directly converting the DIM code delivered by the printer driver 9. (Col. 8, lines 14-24). The PIM code is then used to create a bit map image and the image is printed. (Col. 8, lines 25-32).

Further, claim 17 recites selecting an intermediate code rasterizing means on the basis of intermediate code identification information input from the intermediate code generating means, controlling print image information rasterized by the selected intermediate code rasterizing means to be stored in a prescribed storage area of the printer device, and printing on the basis of the stored print image information.

On page 2 of the August 26, 2004 Final Office Action, the Examiner again refers to the GRM module 83, and maintains that the selection of an intermediate code rasterizing means is disclosed in col. 8, lines 5-25 of Suzuki. However, the PIM code (printer intermediate code) is delivered right from the GRM 83 to a PIM code register and develop part 87 (col. 8, lines 25-27). The PIM code is registered, and then, in synchronization with the print engine 17, the PIM code is read out, and a bit map image is developed in accordance with the read-out PIM code (col. 8, lines 27-32). Accordingly, assuming *arguendo* that the PIM code discloses a type of

intermediate code identification information, there is no "selection" of an intermediate code rasterizing means on the basis of the PIM code. Rather, as set forth above, all PIM code generated is sent to the same PIM code register and develop part 87.

In response to the November 24, 2004 Amendment, and Appellant's above argument, i.e., that Suzuki only teaches one type of language, the Examiner maintains that the PDL and DIM generated by the printer driver 9 of Suzuki discloses more than one type of language (December 14, 2004 Advisory Action citing to col. 2, lines 10-28 and col. 4, lines 23-42 of Suzuki).

In regard to col. 2, lines 10-28 of Suzuki, the reference merely discloses that the printer driver has an intermediate level job data generating means and an intermediate code conversion means. The job data generating means generates intermediate level print job data from the print job data, and the code conversion means receives that intermediate level print job data and performs a conversion (col. 2, lines 16-24). Such disclosure fails to teach any "types" of language. Rather, the cited portion merely discloses "print job data" and the conversion of the print job data into "intermediate level print job data" (i.e., an intermediate code generated from the print job data). There is no determination of a "type" of language of the print job data, or the selection of an intermediate code generation means based on such determination, as recited in claim 17.

In regard to col. 4, lines 23-42, Suzuki is merely disclosing the PDL language, and the two intermediate codes DIM and PIM, which are generated from the PDL (col. 4, lines 32-41). Thus, the intermediate code DIM does not constitute a "type" of language to be selected. As set forth in claim 17, the type of language of the print data is determined prior to generating an

intermediate code from the print data, and the intermediate code generating means is selected based on the determination of the type of language of the print data. Accordingly, contrary to the Examiner's comments provided in the Advisory Action, Appellant submits that the intermediate code DIM does not constitute a type of language of an input print data, as it is recited in claim 17.

For at least the above reasons, Appellant submits that Suzuki does not teach every limitation of independent claim 17.

2. Claims 18-20

Since claims 18-20 are dependent upon claim 17, Appellant submits that such claims are patentable at least by virtue of their dependency.

B. Rejection of claims 1-16 under 35 U.S.C. § 103(a) in view of Suzuki and Parker.

It is respectfully submitted that claims 1-16 are patentable over the combination of Suzuki and Parker for at least the following reasons.

1. Claim 1

Appellant submits that Suzuki, alone or in combination with Parker, fails to teach or suggest a data processing device comprising a plurality of intermediate code generators, at least

one being operable to generate intermediate code compatible with the print data by performing a language analysis of the print data, as recited in claim 1.

As discussed above in regard to independent claim 17, Suzuki discloses a system where a single printer control language (PCL) is utilized in the host computer. The PCL, such as PDL, is then converted to an intermediate code, or not converted, depending on whether the print mode is a printer page mode or a driver page mode, respectively. If the print mode is printer page mode, the PCL commands are sent unconverted to the printer where the PCL is converted to intermediate code. Alternatively, if the mode is driver page mode, the intermediate code generated by the printer driver in the host is sent to the printer. In any event, Suzuki does not disclose a data processing device that comprises a plurality of intermediate code generators.

As discussed above, Suzuki discloses an intermediate code generator in the host, i.e., generating DIM code, and an intermediate code generator in the printer, i.e., generating PIM code, depending on which of the two print modes is utilized. Since there is only one "type" of language processed in Suzuki, however, there is no need for a data processing device that comprises a plurality of code generators. Appellant further submits that Parker fails to compensate for the deficiency of Suzuki. Accordingly, Appellant submits that the proposed combination of Suzuki and Parker does not disclose all the recited features of claim 1.

In the August 26, 2004 Final Office Action, the Examiner cited to Figs. 1-3, col. 2, lines 30-45 and col. 3, lines 20-35 of Parker as a plurality of intermediate rasterizing means, which are recited in claim 1. In response to the above argument regarding the plurality of code generators, the Examiner again cites to the same portions of Parker, i.e., Figs. 1-3, col. 2, lines 30-45 and

col. 3, lines 20-35, but this time maintains that such portions disclose the claimed plurality of code generators (*see* Advisory Action). Appellant submits, however, that the cited portions merely disclose the rasterizer-compositors, and do not disclose a plurality of intermediate code generators.

Accordingly, Appellant again submits that Parker fails to cure the deficient teachings of Suzuki, and as such, claim 1 is patentable over the cited references.

2. Claims 4-7

To the extent claims 4-7 depend from claim 1, Appellant submits that such claims are patentable at least by virtue of their dependency.

3. Claim 2

Appellant submits that Suzuki, alone or in combination with Parker, fails to teach or suggest a printer that comprises a plurality of intermediate code generators, at least one being operable to generate intermediate code compatible with the print data by performing language analysis of the print data, as recited in claim 2.

As discussed above, Suzuki discloses two respective intermediate code generators, one in the host (DIM), and one in the printer (PIM). Suzuki, however, does not disclose having more than one intermediate code generator in the printer. This follows since the Suzuki invention is directed to increasing printer throughput by offloading intermediate code generation under

certain circumstances, i.e., driver page mode, and performing the intermediate code generation in the printer when in printer page mode.

Appellant submits that Parker fails to compensate for the deficiency of Suzuki. For example, as set forth above, in the August 26, 2004 Final Office Action, the Examiner cited to Figs. 1-3, col. 2, lines 30-45 and col. 3, lines 20-35 of Parker as disclosing the claimed plurality of intermediate rasterizing means. In response to the above argument, the Examiner again cites to the same portions of Parker, but maintains that such portions disclose the claimed plurality of intermediate code generators (*see* Advisory Action). Appellant submits, however, that the cited portions merely disclose the rasterizer-compositors, and do not disclose a plurality of intermediate code generators.

Accordingly, the proposed combination of Suzuki and Parker does not disclose all the recited features of independent claim 2.

4. Claims 3-7

To the extent claims 3-7 depend from claim 2, Appellant submits that such claims are patentable at least by virtue of their dependency.

In addition, claim 3 recites that a determination means determines which one of a plurality of different printer languages the input print data corresponds to, and selects a particular intermediate code generator on the basis of the determination result. For similar reasons as set forth above, Appellant submits that the combination of Suzuki and Parker fail to disclose that a

particular intermediate code generator is selected based on a plurality of different printer languages.

5. Claim 8

Appellant submits that Suzuki, alone or in combination with Parker, fails to teach or suggest determination means for determining the type of language of input print data, and selecting from a plurality of intermediate code generating means on the basis of the determination result.

As discussed above, for example in regard to claim 17, nowhere in Suzuki is "selecting" from a plurality of intermediate code generating means based on the determination of a "type of language", as claimed, either taught or suggested. Since Suzuki deals with a single printer control language (PCL), the "type of language" need not be determined. Further, since there is only one PCL, there is no need for a plurality of intermediate code generators from which one needs to be selected, based on the determination of the type of language or otherwise.

Appellant further submits that Parker fails to compensate for the deficiency of Suzuki. For example, as set forth above, in the August 26, 2004 Final Office Action, the Examiner cited to Figs. 1-3, col. 2, lines 30-45 and col. 3, lines 20-35 of Parker as disclosing the claimed plurality of intermediate rasterizing means. In response to the above argument, the Examiner again cites to the same portions of Parker, but maintains that such portions disclose the claimed plurality of intermediate code generators (*see* Advisory Action). Appellant submits, however,

that the cited portions merely disclose the rasterizer-compositors, and do not disclose a plurality of intermediate code generators.

Accordingly, the proposed combination of Suzuki and Parker does not disclose all the recited features of independent claim 8.

6. Claims 9-12

Since claims 9-12 are dependent upon claim 8, Appellant submits that such claims are patentable at least by virtue of their dependency.

7. Claim 13

Appellant submits that Suzuki, alone or in combination with Parker, fails to teach or suggest a data processing device that comprises a plurality of intermediate code generating means for generating intermediate code compatible with print data by performing language analysis of the print data, or wherein the intermediate code generating means of said data processing device other than the selected intermediate code generating means are capable of analyzing print data described in a language incompatible with said printer device alone.

As discussed above in regard to claim 1, Suzuki discloses two respective intermediate code generators in the host (DIM) and the printer (PIM). Suzuki, however, does not disclose having more than one intermediate code generator in a data processing device.

Further, Appellant submits that Parker fails to compensate for this deficiency of Suzuki. For example, as set forth above, in the August 26, 2004 Final Office Action, the Examiner cited

to Figs. 1-3, col. 2, lines 30-45 and col. 3, lines 20-35 of Parker as disclosing the claimed plurality of intermediate rasterizing means. In response to the above argument, the Examiner again cites to the same portions of Parker, but maintains that such portions disclose the claimed plurality of intermediate code generators (*see* Advisory Action). Appellant submits, however, that the cited portions merely disclose the rasterizer-compositors, and do not disclose a plurality of intermediate code generators.

Accordingly, the proposed combination of Suzuki and Parker does not disclose all the recited features of independent claim 13.

Additionally, consistent with the discussion above in regard to Suzuki, Suzuki does not disclose an additional intermediate code generator, i.e., in addition to the one in the printer and the one in the host, that is incompatible with the printer device. Both the DIM and PIM code generators disclosed in Suzuki are solely compatible with the printer. Parker fails to compensate for this additional deficiency of Suzuki and, accordingly, for this additional reason the §103 rejection of claim 13 should be withdrawn.

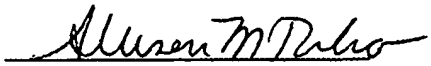
8. Claims 14-16

Since claims 14-16 are dependent upon claim 13, Appellant submits that such claims are patentable at least by virtue of their dependency.

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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CLAIMS APPENDIX

CLAIMS 1-20 ON APPEAL:

1. (rejected): A printing system comprising:

a host operable to output print data compatible with at least one of a plurality of different printer languages;

a data processing device comprising a plurality of intermediate code generators, at least one being operable to generate intermediate code compatible with the print data by performing a language analysis of the print data, and a plurality of intermediate code rasterizing means for respectively rasterizing the generated intermediate code into print image information; and

a printer comprising printing means for controlling the print image information rasterized by the intermediate code rasterizing means to be stored in a prescribed storage area of said printer, and printing on the basis of said stored print image information.

2. (rejected): A printing system comprising a printer, wherein the printer receives print data and comprises:

a plurality of intermediate code generators, at least one being operable to generate intermediate code compatible with the print data by performing language analysis of the print data; and

a plurality of intermediate code rasterizing means for rasterizing said generated intermediate code into print image information,

wherein the at least one intermediate code generator is operable to process print data described in any one or more of a plurality of different printer languages.

3. (rejected): A printing system according to claim 2, wherein said printer further comprises determination means for determining which one of the plurality of different printer languages the input print data corresponds to, selecting a particular intermediate code generator on the basis of the determination result, and delivering the print data to the selected intermediate code generator.

4. (rejected): A printing system according to any one of Claims 1 to 3,

wherein the intermediate code generator generates an intermediate code and outputs identification information corresponding to the intermediate code to said printer, and

wherein said printer selects a particular intermediate code rasterizing means on the basis of intermediate code identification information input from the intermediate code generator, and controls print image information rasterized by said selected intermediate code rasterizing means.

5. (rejected): A printing system according to Claim 4,

wherein said printer stores the corresponding relation between intermediate code identification information and the intermediate code rasterizing means, and selects an intermediate code rasterizing means with reference to the corresponding relation.

6. (rejected): A printing system according to Claim 4,

wherein said intermediate code identification information includes address information for calling the corresponding intermediate code rasterizing means.

7. (rejected): A printing system according to Claim 4,

wherein said intermediate code generator further outputs information of bandwidth and bandheight compatible with an intermediate code, and

wherein said printer restructures said storage area on the basis of information of bandwidth and bandheight input through the intermediate code generator, and controls said rasterized print image information to be stored in said prescribed storage area restructured in band units.

8. (rejected): A printer device, comprising:

determination means for determining the type of language of input print data, selecting from a plurality of intermediate code generating means on the basis of the determination result, and delivering said print data to said selected intermediate code generating means, and

printing means for controlling print image information rasterized by intermediate code rasterizing means to be stored in a prescribed storage area of said printer device, and printing on the basis of said stored print image information.

9. (rejected): A printer device according to Claim 8, wherein said printing means selects from a plurality of intermediate code rasterizing means on the basis of intermediate code identification information input from said selected intermediate code generating means.

10. (rejected): A printer device according to Claim 9, wherein said printing means stores the corresponding relation between intermediate code identification information and intermediate code rasterizing means, and selects the intermediate code rasterizing means with reference to the corresponding relation.

11. (rejected): A printer device according to Claim 9, wherein said intermediate code identification information includes address information for calling the corresponding intermediate code rasterizing means.

12. (rejected): A printer device according to any one of Claims 8 to 11, wherein said printing means restructures bandwidth and bandheight which comply with each intermediate code, and controls said rasterized print image information to be stored in said prescribed storage area restructured in band units.

13. (rejected): A data processing device to be used in combination with a printer device, comprising:

a plurality of intermediate code generating means for generating intermediate code compatible with print data by performing language analysis of the print data, and

intermediate code rasterizing means for rasterizing corresponding generated intermediate code from a selected one of said intermediate code generating means into print image information,

wherein the intermediate code generating means of said data processing device other than the selected intermediate code generating means are capable of analyzing print data described in a language incompatible with said printer device alone.

14. (rejected): A data processing device according to Claim 13, wherein the intermediate code generating means of said data processing device generates intermediate code as well as outputs identification information of the intermediate code to said printer device.

15. (rejected): A data processing device according to Claim 14, wherein said intermediate code identification information includes address information for calling the compatible intermediate code rasterizing means.

16. (rejected): A data processing device according to any one of Claims 13 to 15, wherein intermediate code generating means of said data processing device further outputs information of bandwidth and bandheight compatible with the intermediate code (or language) to said printer device.

17. (rejected): A printing method to be used in a printer system combining a printer device and a data processing device, comprising:

a determination step for determining the type of language of input print data, selecting an intermediate code generating means on the basis of the determination result, and delivering said print data to said selected intermediate code generating means, in said printer device; and

an intermediate code generating step for generating the intermediate code compatible with the print data by performing language analysis of print data, and outputting the intermediate code identification information, in an intermediate code generating means of said printer device or an intermediate code generating means of said data processing device; and

a print control step for selecting an intermediate code rasterizing means on the basis of intermediate code identification information input from the intermediate code generating means, controlling print image information rasterized by said selected intermediate code rasterizing means to be stored in a prescribed storage area of said printer device, and printing on the basis of said stored print image information, in said printer device.

18. (rejected): A printing method according to Claim 17 using the data processing device comprising the intermediate code generating means, wherein the intermediate code of said data processing device is capable of analyzing the print data described in a language not corresponding to the intermediate code generating means of said printer device.

19. (rejected): A printing method according to Claim 17, wherein said print control step selects an intermediate code rasterizing means with reference to the corresponding relation between intermediate code identification information and the intermediate code rasterizing means.

20. (rejected): A computer readable storage medium storing a program for making a computer execute the printing method according to any one of Claims 17 to 19.